PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	**FOR FURTHER ACTION**	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/IL 03/00622	International filing date *(day/month/year)* 27.07.2003	Priority date *(day/month/year)* 25.07.2002
International Patent Classification (IPC) or both national classification and IPC G06T7/00, G06T7/00		
Applicant VET-TECH LTD. et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 8 sheets, including this cover sheet.

   ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of sheets.

3. This report contains indications relating to the following items:

   - I ☒ Basis of the opinion
   - II ☐ Priority
   - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV ☐ Lack of unity of invention
   - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI ☐ Certain documents cited
   - VII ☐ Certain defects in the international application
   - VIII ☐ Certain observations on the international application

Date of submission of the demand	Date of completion of this report
24.02.2004	15.04.2004
Name and mailing address of the international preliminary examining authority: European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized Officer Telephone No. +49 89 2399-

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/IL 03/00622

I. Basis of the report

1. With regard to the **elements** of the international application *(Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*:

Description, Pages

1-23 as originally filed

Claims, Numbers

1-41 as originally filed

Drawings, Sheets

1/6-6/6 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

   (Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	1-41
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-41
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-41
	No:	Claims	

2. Citations and explanations

see separate sheet

1. Reference is made to the following documents:

   D1: US-B-6 377 3531 (Ellis) 23 April 2002
   D2: US-A-5 483 441 (Scofield) 9 January 1996
   D3: US-B-6 234 1091 (Andersson et al.) 22 May 2001

2. **Item V: Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

2.1 The present application meets the requirements of Articles 33(2) and 33(3) PCT because the subject matter of claims 1, 2 and 22-24 is novel and involves an inventive step, the reasons being as follows:

As to claim 1:
D1 discloses:
- An imaging method for use in automatic monitoring the body condition of an animal (see abstract, lines 1-11), the method comprising:
- I) imaging a predetermined region of interest on the animal body, and generating data indicative thereof (see abstract, lines 1-11);

D1 however fails to disclose:
- ii) processing the generated data to obtain a three-dimensional representation of the region of interest;
- iii) analyzing said three-dimensional representation to determine a predetermined measurable parameter indicative of a surface relief of the region of interest indicative of the body condition.

D1 merely discloses a method for volumetric measurement of an animal by projecting a light spot pattern onto the animal and determining the vertical, horizontal and depth dimension for each projected point.
Although D1 determines a 3D model for the volumetric measurement, no surface relief parameter is determined from the 3D model. D1 therefore fails to disclose feature ii) and iii) of present claim 1.

D2, cited in the application, discloses an animal evaluation device taking images

from two fields of view through which the animal moves, thereby forming the difference image from which parameters are determined.
D2 does not involve 3D modelling of the region of interest and no surface relief determination therefrom. Thus, D2 fails to disclose feature I)-iii) of claim 1.

D3, cited in the application, discloses a device for determining the position of the teats of a cow to guide an automatic milking device. D3 also involves structured light to measure the 3D position of the teats, but also fails to disclose features ii) and iii) of claim 1, namely that a surface relief parameter indicative of a body condition of the animal is determined from said 3D model.

An inventive step can be acknowledged.

As to claim 2:
D1 discloses:
- A method for optimizing nutrition of an animal, the method comprising automatically monitoring the energy balance of the animal (see abstract, lines 1-11), said monitoring comprising:
- I) imaging a predetermined region of interest on the animal body, and generating data indicative thereof (see abstract, lines 1-11);

D1 however fails to disclose:
- ii) processing the generated data to obtain a three-dimensional representation of the region of interest;
- iii) analyzing said three-dimensional representation to determine a predetermined measurable parameter indicative of a surface relief of the region of interest indicative of the energy condition of the animal.

Claim 2 meets the requirements of Articles 33(2) and 33(3) PCT for the same reasons as given for claim 1 above.

As to claim 22:
D1 discloses:
- A method for monitoring the condition of an animal (see abstract, lines 1-11).

D1 however does not disclose:
- (1) imaging the cow while marching along a predetermined path and generating

data indicative of the acquired images;
- (2) analyzing said data to identify the existence of a certain pattern of locomotion or in-coordination in the cow's marching, said pattern being indicative of the existence of neurological disorders associated with nervous system diseases of the animal.

Feature (1) can be found in document D2 (see figure 1a). However, none of the available documents of the prior art discloses feature (2).

An inventive step can be acknowledged.

As to claim 23:
D1 discloses:
- An imaging method for use in automatic monitoring the body condition score (BCS) of a dairy cow (see abstract, lines 1-11).

D1 however fails to disclose:
- imaging a first region of interest on the cow's body in the vicinity of the transverse processes of the lumbar vertebrae and the spinous processes of the lumbar vertebrae of the cow, and a second region of interest on the cow's body in the vicinity of its tail part, and generating imaged data;
- processing the imaged data to obtain a three-dimensional representation of the first region of interest and the second region of interest;
- analyzing the three-dimensional representation to determine a predetermined measurable parameter indicative of a surface relief of the region of interest, thereby determining first and second BCS values for the first and second regions of interest, respectively, a difference between the first and second BCS values being indicative of a tendency in the cow energy balance condition.

None of these features are disclosed in any of the available prior art.

An inventive step can be acknowledged.

As to claim 24:
D1 discloses:
- A system for monitoring the body condition of an animal (see abstract, lines 1-11), the system comprising:
- (a) an optical device including an illuminating assembly operable to produce structured light in the form of an array of spatially separated light components to thereby illuminate an array of locations within a predetermined region of interest on a body part of the animal, and a light detection assembly operable for acquiring at least one image of the illuminated body part by collecting light scattered therefrom and generating data indicative of the acquired image (see abstract, lines 1-11 and figure 1);

D1 does not disclose:
- (b) a control unit connectable to the optical device, the control unit comprising a memory utility for storing reference data representative of the body condition scales and corresponding values of a predetermined measurable parameter that is indicative of the curvature of the predetermined region of interest; and a data processing and analyzing utility preprogrammed for processing the data indicative of the acquired image to calculate a value of the measurable parameter for the specific imaged animal, and analyze the calculated value with respect to the reference data to thereby determine the body condition scale of the specific animal.

D1 merely discloses a method for volumetric measurement of an animal by projecting a light spot pattern onto the animal and determining the vertical, horizontal and depth dimension for each projected point.
Although D1 determines a 3D model for the volumetric measurement, no curvature is determined. D1 therefore fails to disclose feature b) of present claim 24.

Feature b) is further not disclosed by any of the available prior art.

An inventive step can be acknowledged.

2.3 The independent claims are not in the two-part form in accordance with Rule 6.3(b) PCT, which in the present case would be appropriate, with those features known in combination from the prior art (document D1) being placed in the preamble (Rule 6.3(b)(I) PCT) and with the remaining features being included in the characterising part (Rule 6.3(b)(ii) PCT).

The independent claims should therefore be redrafted accordingly. If, however, the applicant is of the opinion that the two-part form would be inappropriate, then reasons therefor should be provided in the letter of reply. In addition, the applicant should ensure that it is clear from the description which features of the subject-matter of the claims are already known in combination from the document D1 (see the PCT Guidelines, III-2.3a).

2.4 The features of the claims are not provided with reference signs placed in parentheses (Rule 6.2(b) PCT).

2.5 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the document D1 is not mentioned in the description, nor is this document identified therein.